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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/680,833	10/07/2003	Martin Vetterli	080463	2995

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EXAMINER	
AHN, SAM K	

ART UNIT	PAPER NUMBER
2611	

NOTIFICATION DATE	DELIVERY MODE
04/24/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/680,833	VETTERLI ET AL.	
	Examiner	Art Unit	
	SAM K. AHN	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-10 and 13-24* is/are rejected.

7)☒ Claim(s) *2,11 and 12* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *012208*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in EPO on 03/26/01 and 08/15/01. It is noted, however, that applicant has not filed a certified copy of the App. No. 01107530.6 and 01119537.7 applications as required by 35 U.S.C. 119(b).

Specification

2. The abstract of the disclosure is objected to because the abstract should be in a single paragraph. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claim 22 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Data structures not claimed as embodied in computer-readable media are descriptive material per se and are not statutory because they are not capable of causing functional change in the computer. Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention which permit the data structure's functionality to be realized. In contrast, a claimed computer-readable medium

encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory.

Similarly, computer programs claimed as computer listings per se, i.e., the descriptions or expressions of the programs, are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer which permit the computer programs' functionality to be realized. In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory.

In this case, the claim is not directed to a Claim 22 is **not** directed to a **Process** within the meaning of 101, since it's not a series of steps or acts being performed, but instead a program which when executed would cause a series of process steps or acts to occur.

The claim is **not** directed to a **Machine** within the meaning of 101, since it's not a part of a device or a combination of devices.

The claim is **not** directed to a **Manufacture** within the meaning of 101, since it's not an article produced from raw or prepared materials.

The claim is **not** a composition of **Matter** within the meaning of 101, since it's not a combination of two or more substances nor does it have any mass to be matter.

Therefore, the claim fails to fall within a statutory category of invention and should be rejected as non-statutory on at least that grounds.

Claim Rejections - 35 USC § 112

4. Claims 23 and 24 provides for the use of sampling, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claims 23 and 24 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd.* v. *Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1,3-10,13,15,16 and 18-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Miller et al. US 6,834,073 B1 (Miller).

Regarding claim 1, Miller teaches reconstruction method for reconstructing a first signal from a set of sampled values generated by sampling a second signal at a sub-Nyquist rate and at uniform intervals, comprising the step of retrieving from said set of sampled values a set of shifts and weights with which said first signal can be reconstructed (first signal x(t) reconstructed through equation (1) in col.7 by retrieving from gBi(t-Ti) from a set of shifts or phases and weights or amplitudes, note c.7, l.55-65). The recitation in the preamble is not given patentable weight since the recitation recites the intended use of a structure and the body of claim does not depend on the preamble for completeness and the bodily limitations are able to stand alone.

Regarding claim 3, Miller further teaches wherein the reconstructed signal (x(t)) is a faithful representation of the sampled signal by a known transfer function (note c.2, l.47 transfer function with known bandpass characteristic).

Regarding claim 4, Miller further teaches wherein said transfer function includes the transfer function of a measuring device used for acquiring said second signal (measuring gBi(t) by equation 2 in col.7).

Regarding claim 5, Miller further teaches wherein the reconstructed signal (x(t)) can be represented as a sequence of known functions weighted by said weights and shifted by said shifts (x(t) represented as a sequence gBi(t – Ti) as in equation 1 with weights or amplitudes and shifts or phases, note c.7, l.55-65).

Regarding claim 6, Miller further teaches wherein the sampling rate is at least equal to the rate of innovation of said first signal (note c.14, l.5-14).

Regarding claim 7, Miller further teaches wherein a first system of equations is solved in order to retrieve said shifts and a second system of equations is solved in order to retrieve said weights (note c.7, l.60-65 of Bi,1 equation for amplitudes or weights and Bi,2 equation for shifts or phases).

Regarding claim 8, Miller further teaches wherein the Fourier coefficients of said sample values are computed in order to define the values in said first system of equations (note c.9, l.3-9 wherein g(t) that includes the weights and shifts are Fourier transformed).

Regarding claim 9, Miller further teaches including the following steps: finding at least 2K spectral values of said first signal using an annihilating filter for retrieving said arbitrary shifts from said spectral values (see filtering performed by 108 in Fig.1 for further processing including determining g(t) of at least 2K spectral values of i in equation 1 of shifts or phases, col.7, l.62-63).

Regarding claim 10, Miller further teaches wherein said first signal (x(t)) is a periodic signal with a finite rate of innovation (see Ti in col.7, l.9-21 with finite set).

Regarding claim 13, Miller further teaches wherein said first signal (x(t)) is a finite length signal with a finite rate of innovation (see Ti in col.7, l.9-21 with finite set).

Regarding claim 15, Miller further teaches wherein said reconstructed signal (x(t)) is related to the sampled signal by a Gaussian transfer function (note col.8, l. 12-23).

Regarding claim 16, Miller further teaches wherein said first signal (x(t)) is an infinite length signal in which the rate of innovation is locally finite (see Ti in col.7, l.9-21 with finite set), said reconstruction method comprising a plurality of successive steps of reconstruction of successive intervals of said first signal (successive steps of sigma summing in equation 1).

Regarding claim 18, Miller further teaches wherein said first signal (x(t) is a bilevel signal (see Fig.4A).

Regarding claim 19, Miller further teaches wherein said first signal (x(t) is a bilevel spline signal (see Fig.4A).

Regarding claim 20, Miller further teaches wherein said first signal (x(t) is a CDMA or a Ultra-Wide Band signal (note c.2, l.8).

Regarding claim 21, Miller further teaches a circuit for reconstructing a sampled signal (x(t)) by carrying out the method of claim 1 (as explained above and see Fig.1 of circuitry performing of claim 1).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. US 6,834,073 B1 (Miller) in view of Absar et al. US 7,177,812 B1 (Absar).

Regarding claim 14, Miller teaches all subject matter claimed, as applied to claim 13. However, Miller does not teach wherein said reconstructed signal (x(t)) is related to the sampled signal by a sinc transfer function.

Absar teaches wherein a reconstructed signal (26 in Fig.2) is related to the sampled signal (input to 24) by a sinc transfer function (24). Absar further suggests that the sinc transfer function removes aliasing effect (note c.4, l.29-30). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teaching of Absar in the system of Miller of implementing the sinc transfer function for the purpose of removing aliasing effect (note c.4, l.29-30).

Regarding claim 17, Miller teaches all subject matter claimed, as applied to claim 13. However, Miller does not teach wherein said reconstructed signal (x(t)) is related to the sampled signal by a spline transfer function.

Absar teaches wherein a reconstructed signal (16 in Fig.1) is related to the sampled signal (input to 24) by a spline transfer function (14). Absar further suggests that the spline transfer function removes aliasing effect (note c.4, l.29-30). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teaching of Absar in the system of Miller of implementing the sinc transfer function for the purpose of removing aliasing effect (note c.4, l.29-30).

Allowable Subject Matter

7. Claims 2,11 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Ahn whose telephone number is (571) 272-3044. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Sam K. Ahn/
Primary Examiner, Art Unit 2611

4/22/2008